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 Samsung Electronics America, Inc., and Samsung  
 Telecommunications America LLC  
 14

15 UNITED STATES DISTRICT COURT  
 16 NORTHERN DISTRICT OF CALIFORNIA, SAN JOSE DIVISION

17 APPLE INC., a California corporation,  
 18 Plaintiff,  
 19 vs.  
 20 SAMSUNG ELECTRONICS CO., LTD., a  
 Korean business entity; SAMSUNG  
 21 ELECTRONICS AMERICA, INC., a New  
 York corporation; SAMSUNG  
 22 TELECOMMUNICATIONS AMERICA,  
 LLC, a Delaware limited liability company,  
 23 Defendants.  
 24

CASE NO. 11-cv-01846-LHK  
**DECLARATION OF JEFFREY  
 JOHNSON, PH.D., IN SUPPORT OF  
 SAMSUNG'S OPPOSITION TO APPLE'S  
 MOTION FOR A PRELIMINARY  
 INJUNCTION**

Date: October 13, 2011  
 Time: 1:30 p.m.  
 Courtroom 4, 5th Floor  
 Judge: Hon. Lucy H. Koh

**PUBLIC REDACTED  
 VERSION**

1 I, Jeffrey Johnson, hereby declare as follows:

2 **I. BACKGROUND**

3 1. I am currently the President and Principal Consultant at UI Wizards, Inc., where I  
4 manage the company, perform product usability design, evaluation, testing and training for clients.

5 2. I have more than 32 years of experience in the computer industry designing,  
6 implementing, evaluating, and testing user interfaces, including touch-screen based user interfaces.  
7 Previously, I held positions at Cromemco, Xerox, US West, Hewlett-Packard and Sun  
8 Microsystems. I have authored numerous publications on user interface technology, including four  
9 books in this field.

10 3. I earned a B.A. in psychology from Yale University and a Ph.D. in psychology  
11 with additional studies in computer science from Stanford University.

12 4. My experience includes consulting with Samsung on the Blackjack II device, a  
13 Samsung smartphone that was released in late 2007 or 2008. My work involved exploring issues  
14 to improve the user interface and user experience.

15 5. I have also published multiple papers relating to touchscreens. In 1995, I published  
16 a paper entitled "A Comparison of User Interfaces for Panning on a Touch-Controlled Display" in  
17 the proceedings of the Computer-Human Interaction (CHI) conference in 1995. I also made a  
18 presentation on the same subject at the CHI conference in 1995. The study involved, among other  
19 things, an investigation into the accuracy of panning. In April 1994, I published another paper on  
20 touchpad technology entitled "The Effect of Touch-Pad Size on Pointing Accuracy" as a  
21 FirstPerson Technical Report FP-1994-2. This study investigated the accuracy of certain  
22 touchpads. In August 1995, I published a paper entitled "A Comparison of Remote Pointing  
23 Devices for Interactive TV Applications" as another FirstPerson Technical Report FP-1994-5.  
24 This study also investigated the accuracy of certain touchpads.

25 6. Attached as Exhibit 1 is my Curriculum Vitae which summarizes my background,  
26 credentials, and includes a list of my publications.

27

28

1           7.       I have been asked by counsel for Samsung Electronics Co., Ltd.; Samsung  
2 Electronics America, Inc.; and Samsung Telecommunications America, LLC (collectively  
3 “Samsung”) to assess whether certain limitations of Apple’s allegations of infringement of U.S.  
4 Patent No. 7,469,381 (“’381 Patent”) that were asserted in conjunction with Apple’s preliminary  
5 injunction against Samsung Galaxy S 4G, Samsung Infuse 4G, Samsung Droid Charge and  
6 Samsung Galaxy Tab 10.1 (collectively “Accused Devices”) are met.

7           8.       Apple has moved in its Motion to preliminarily enjoin Samsung “from infringing  
8 three Apple design patents and one utility patent by selling four recently released products: the  
9 Infuse 4G, Galaxy S 4G, Droid Charge smartphones, and the Galaxy Tab 10.1 tablet computer.”

10          9.       I am being compensated at my customary rate for my work on this case. I have  
11 received no other compensation for my work in this litigation. My compensation is in no way  
12 contingent upon the opinions I arrive at or the result of the litigation.

13          10.      In performing my analysis, I have reviewed Apple’s amended complaint against  
14 Samsung, Apple’s Motion For A Preliminary Injunction (“Motion”), and declarations and exhibits  
15 submitted in support of that Motion, the ’381 Patent, the ’381 Patent file history including  
16 references cited therein, a redacted transcript of Dr. Ravin Balakrishnan’s deposition taken on  
17 August 16, 2011, the reexamination file history including references cited therein. I have also  
18 reviewed publicly available documents discussed in this declaration.

19          11.      In addition to my review of documents listed above, I have relied on my training  
20 and experience working in the area of touch screen-based and touchpad user interfaces to arrive at  
21 my opinion.

22          12.      My opinion is that Apple has not shown that the Accused Devices meet the “first  
23 direction” and the “displaying an area beyond the edge of the electronic document” limitations of  
24 the ’381 Patent.

## 25 **II.    LEGAL STANDARDS**

26          13.      I understand that assessment of infringement is a two-step process. First, the  
27 language of the patent claims must be construed by the Court. Second, the claims as construed are  
28

1 applied to the accused product or process to determine whether the accused product or process  
2 meets each and every limitation of the claim as construed by the Court.

3 14. I understand that when interpreting the claims of a patent, the Court first looks at  
4 the intrinsic evidence in the following order: the plain claim language, the specification, and the  
5 prosecution history. The specification and prosecution history often can inform the meaning of  
6 the claim language by demonstrating how the inventor understood the invention and whether the  
7 inventor limited the invention. Extrinsic evidence can also be relevant in determining the meaning  
8 of the claims.

9 15. I understand that there are two types of infringement: literal infringement and  
10 infringement under the doctrine of equivalents (“DOE”). It is my understanding that to literally  
11 infringe a claim, an accused product or process must literally meet every limitation of the claim.

12 16. I understand that in order to succeed on a claim of infringement of a patent claim  
13 the patentee is required to prove infringement of every single limitation of the patent claim. I  
14 further understand that in order to succeed on a claim of infringement of a dependent claim, the  
15 patentee is required to prove infringement of every single limitation of the claim, plus every single  
16 limitation of the claim(s) on which the dependent claim depends. For example, if claim 2 is  
17 dependent on claim 1, in order to succeed on a claim of infringement of claim 2, the patentee must  
18 prove infringement of every single element of both claim 2 and claim 1.

19 17. Therefore, if the patentee fails to prove infringement on a single limitation of an  
20 independent claim, then the patentee will not succeed on any claim of infringement of that  
21 independent claim and all the claims that depend on that independent claim.

22 18. I understand that there are two ways of evaluating whether a requirement is present  
23 under the doctrine of equivalents. One test for equivalency is the "function-way-result" test,  
24 whereby the patentee may show an equivalent when the accused product or process performs  
25 substantially the same function, in substantially the same way, to achieve substantially the same  
26 result, as disclosed in the claim. Equivalency may also be proven where the differences between  
27 the invention as claimed and the accused product or process are insubstantial.

28

1           19.     I am further informed that the same term used multiple times within a single claim  
2 should be interpreted the same way.

3 **III.   APPLE’S ALLEGATIONS OF INFRINGEMENT**

4           20.     Apple has alleged that the Gallery and Contacts applications in the Galaxy S 4G,  
5 Infuse 4G and Droid Charge infringe claims 1-5, 7, 9-10, 13-14, 16, and 19-20 of the ’381 Patent.

6           21.     Apple has further alleged that the Gallery and the Browser applications in the  
7 Galaxy Tab 10.1 infringe claims 1-5, 7, 9-10, 13-14, 16, and 19-20 of the ’381 Patent.

8 **IV.   NON-INFRINGEMENT—“FIRST DIRECTION”**





9           22.     Claim 1 of the ’381 Patent requires: "translating the electronic document displayed  
10 on the touch screen display in a first direction to display a second portion of the electronic  
11 document." (emphasis added.)

12           23.     Claim 1 of the ’381 Patent also requires: "in response to an edge of the electronic  
13 document being reached while translating the electronic document in the first direction"  
14 (emphasis added.)

15           24.     While I understand claim construction has not yet happened in this case, one of  
16 ordinary skill in the art would understand “direction” as used in the claims refers to a translation  
17 that is specified with the degree of accuracy of which the device is capable. This meaning of the  
18 term “direction” is consistent with and supported by the ’381 Patent specification and file history.  
19 *See, e.g.*, ’381 Patent at 15:16-19; 20:60-67; 24:10-15; 27:12-17; 29:21-40; Figs. 8A-8C.

20           25.     This meaning of “direction” appears to differ from Dr. Balakrishnan’s  
21 interpretation of this term. Figure 1 below diagrams various gestures that Dr. Balakrishnan was  
22 asked about and summarizes his testimony with respect to each. In particular, while Dr.  
23 Balakrishnan did not provide a construction for “direction” during his deposition, he testified that  
24 a zig-zag motion or an arc motion consists of movements in only a single direction. Balakrishnan  
25 Depo. Tr. at 103:8-17; 107:1-13; 108:22-110:8. These motions include multiple components and  
26 would not consist of a single direction under my construction of “direction.” Furthermore, Dr.  
27 Balakrishnan’s interpretation of “first direction” is inconsistent and incompatible with the use of  
28

1 “direction” in the ’381 Patent specification. *See, e.g.*, ’381 Patent at 15:16-19; 20:60-67; 24:10-  
 2 15; 27:12-17; 29:21-40.

Example	Balakrishnan Testimony
 <p data-bbox="511 493 633 535">zig – zag</p>	<p data-bbox="901 399 1177 430">same “first direction”</p> <p data-bbox="901 462 1453 493">Exhibit 3 (Balakrishnan Depo. Tr.) at 108:22-111:7.</p>
 <p data-bbox="544 682 592 714">arc</p>	<p data-bbox="901 588 1177 619">same “first direction”</p> <p data-bbox="901 651 1404 682">Exhibit 3 (Balakrishnan Depo. Tr.) at 103:8-17.</p>
 <p data-bbox="479 840 657 871">up then down</p>	<p data-bbox="901 777 1250 808">NOT same “first direction”</p> <p data-bbox="901 840 1437 871">Exhibit 3 (Balakrishnan Depo. Tr.) at 97:15-98:20.</p>
 <p data-bbox="495 997 649 1029">straight line</p>	<p data-bbox="901 966 1201 997">NOT humanly possible</p> <p data-bbox="901 1029 1453 1060">Exhibit 3 (Balakrishnan Depo. Tr.) at 100:18-101:3.</p>

15 **Figure 1.** Balakrishnan testimony on “first direction”

16 26. The term “first direction” as used in both instances in claim 1 refers to the same  
 17 direction. Therefore, in order to meet both “first direction” limitations, a document must be  
 18 translated in the same direction when displaying the second portion of the electronic document as  
 19 when reaching the edge of the document.

20 27. I also note that the first instance of “first direction” appears as “a first direction”  
 21 while the second instance of “first direction” appears as “the first direction.” Because the second  
 22 instance refers to “the,” it is referring to the first instance as an antecedent, further supporting the  
 23 requirement that both “first direction”’s are referring to the same thing.

24 **A. Gallery Application**

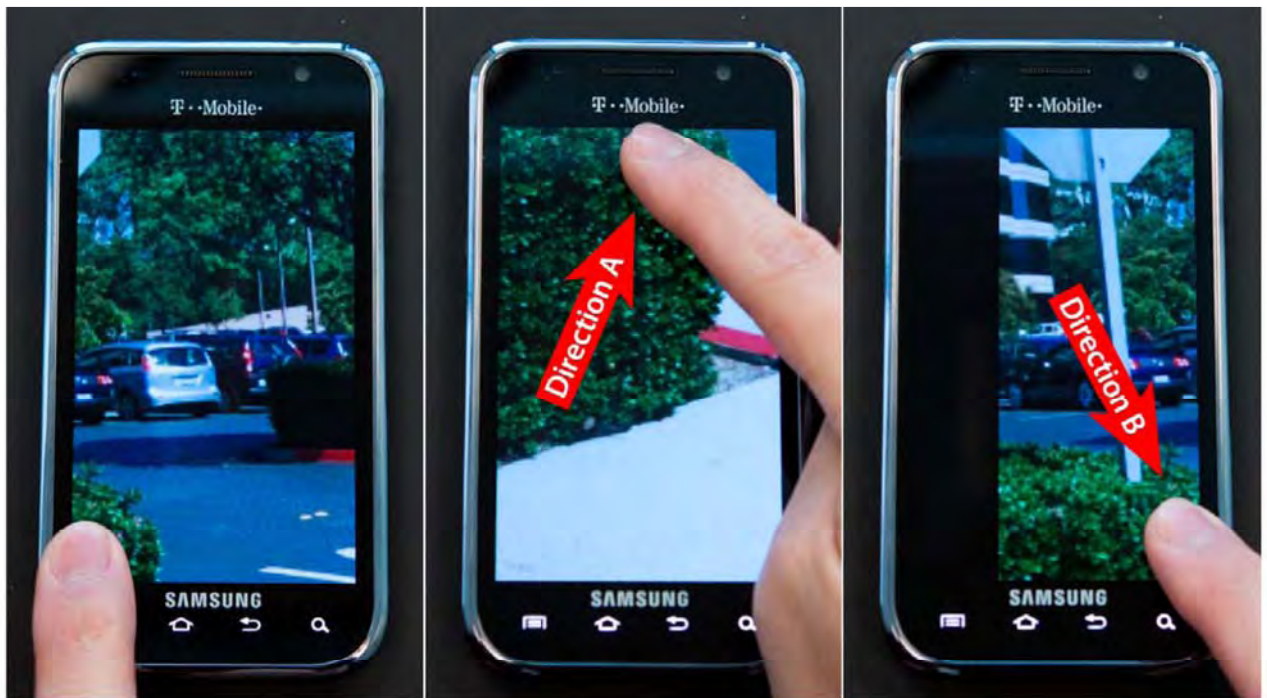
25 28. In the Gallery application, a document is not necessarily translated and in general is  
 26 not translated in the same direction when displaying a second portion of the electronic document  
 27 as when reaching the edge of the document.

1 29. Figures 2-4 illustrate a non-infringing use of the Gallery application on a Samsung  
2 Galaxy S 4G.

3 30. In Figure 2 below, I show an image prior to translation.

4 31. In Figure 3 below, I show a user translating a document to show a second portion  
5 (labeled "Direction A").

6 32. In Figure 4 below, I show the user translating a document in a different direction  
7 when reaching the edge of the document (labeled "Direction B").



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20 **Figure 2. Image prior to translation.**

21 **Figure 3. Image translated in "Direction A"**

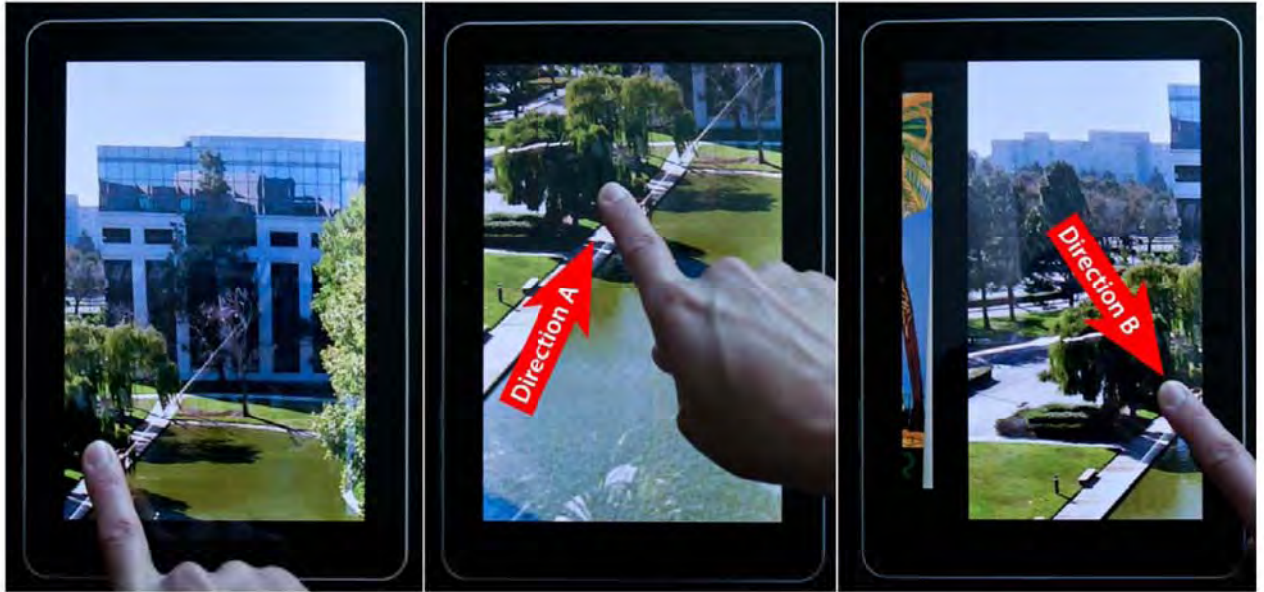
22 **Figure 4. Image translated in "Direction B"**

23 33. Figures 5-7 illustrate a non-infringing use of the Gallery application on a Samsung  
24 Galaxy Tab 10.1.

25 34. In Figure 5 below, I show an image prior to translation.

26 35. In Figure 6 below, I show a user translating a document to show a second portion  
27 (labeled "Direction A").  
28

1           36.     In Figure 7 below, I show the user translating a document in a different direction  
2 when reaching the edge of the document (labeled "Direction B").



13  
14 **Figure 5. Image prior to translation.**

15 **Figure 6. Image translated in "Direction A"**

16 **Figure 7. Image translated in "Direction B"**

17           37.     Unless the document is somehow constrained to translate in only a fixed linear  
18 direction, the two directions, Direction A and Direction B, illustrated in Figures 3 and 4 will  
19 almost certainly be different. In the Gallery application there is no such constraint; the documents  
20 can translate freely in two dimensions. I agree with Dr. Balakrishnan's statement that it is not  
21 humanly possible for a finger to move in exactly a straight line. Balakrishnan Depo. Tr. 100:18-  
22 101:3.

23           38.     Because it is not humanly possible for a finger to move in exactly a straight line,  
24 and use of the Gallery application does not otherwise restrict a document to be translated in the  
25 same direction to show a second portion as when reaching the edge of the document, use of the  
26 Gallery application does not meet both "first direction" limitations of Claim 1.

27           39.     Claims 19 and 20 have the same requirements with respect to their usage of the  
28 term "first direction" as claim 1. As a result, use of the Gallery also does not infringe the "first  
direction" limitations of claims 19 and 20.



1           **B.       Browser Application**

2           40.       As with the Gallery application, a document in the Browser application can be  
3 translated in two dimensions, and therefore is not necessarily translated and in general is not  
4 translated in the same direction when displaying a second portion of the electronic document as  
5 when reaching the edge of the document.

6           41.       Figures 8-10 illustrate a non-infringing use of the Browser application on a  
7 Samsung Galaxy Tab 10.1.

8           42.       In Figure 8 below, I show an image prior to translation.

9           43.       In Figure 9 below, I show a user translating a document to show a second portion  
10 (labeled "Direction A").

11          44.       In Figure 10 below, I show the user translating a document in a different direction  
12 when reaching the edge of the document (labeled "Direction B").



23           **Figure 8. Image prior to translation.**

24           **Figure 9. Image translated in "Direction A"**

25           **Figure 10. Image translated in "Direction B"**

26           45.       As explained above, it is not humanly possible for a finger to move in exactly a  
27 straight line, and use of the Browser application does not otherwise restrict a document to be  
28 translated in the same direction to show a second portion as when reaching the edge of the

1 document, use of the Gallery application does not meet both “first direction” limitations of claims  
2 1, 19 and 20 for the same reasons the Gallery application does not meet the “first direction”  
3 limitations of those claims.

4 46. Furthermore, the accused Samsung devices do not meet the “first direction”  
5 limitations under the doctrine of equivalents. The Gallery and Browser applications both allow  
6 the user to move a document in two dimensions and therefore, they do not behave in substantially  
7 the same way nor do they achieve substantially the same function or result as what is claimed by  
8 the “first direction” limitations. The translation of the document in Gallery and Browser are not  
9 constrained to a “first direction” and the way the edge of the document is reached affects the  
10 behavior of these applications after the edge has been reached. Moreover, the differences between  
11 the Gallery and Browser applications and the claimed “first direction” limitations are not  
12 insubstantial because the touchscreen is sensitive to two dimensional movement and the  
13 translation of the document also occurs in two dimensions.

14  
15 **V. NON-INFRINGEMENT – “DISPLAYING AN AREA BEYOND THE EDGE OF**  
16 **THE DOCUMENT”**

17 47. Claim 1 of the ’381 Patent requires: “in response to an edge of the electronic  
18 document being reached ... displaying an area beyond the edge of the document.” (emphasis  
19 added.)

20 48. Apple has not provided a construction of “displaying” in its motion nor has Dr.  
21 Balakrishnan provided a construction in his declaration or deposition. One of ordinary skill in the  
22 art would understand “displaying an area” requires that some part of the area beyond the edge of  
23 the document emits light or is illuminated. Construing “displaying an area” to require emission of  
24 light is consistent with the ’381 Patent specification. *See, e.g.*, ’381 Patent at 3:6; 3:45; 4:8; 4:19;  
25 9:40; 10:2; 10:12; 10:23; 12:24; 15:32; 15:33; 18:31; 22:47.

26 49. Furthermore, in addition to “displaying an area beyond the edge of the document”  
27 “displaying” or “display” is used in multiple places in the claim: “displaying a first portion,”  
28 “display a second portion,” “displaying a third portion,” “display a fourth portion.” In all of these

1 instances, “display” or “displaying” refers to an active display including emission of light or  
2 illumination. Because terms should be construed consistently within a claim, “displaying an area  
3 beyond the edge of the document” should also require active display including emission of light.

4 50. Applying this understanding, if a device is turned off, its screen is displaying  
5 nothing. More specifically, if an area of the screen is turned off, that area of the screen is not  
6 displaying anything. A black portion of the screen beyond the edge of a document does not meet  
7 the limitation “displaying an area beyond the edge of the document” because there is no emission  
8 of light in that area.

9 51. The Samsung Galaxy S 4G, the Samsung Infuse 4G and the Samsung Droid Charge  
10 (collective, “Accused Smartphone Devices”) all use a display technology known as Super  
11 AMOLED, which is a type of AMOLED technology. Balakrishnan Decl. Exhs. 2-4, 6-8.  
12 AMOLED stands for Active Matrix Organic Light-Emitting Diode and is a display technology  
13 using light-emitting diodes as light sources so each pixel is emissive. Each pixel emits light when  
14 activated and is turned off when black is desired.

15 52. One of the advantages of AMOLED technology is that it consumes significantly  
16 less power than other flat panel display technologies. The more black there is on the screen at any  
17 given time, the less power the screen consumes at that time. For example, an AMOLED display  
18 showing white text on black background uses less than one-third the power of showing black text  
19 on white background. Exhibit 2 (Mian Dong; Choi, Y.-S.K; Lin Zhong (July 2009). "Power  
20 modeling of graphical user interfaces on OLED displays". Design Automation Conference, 2009.  
21 DAC '09. 46th ACM/IEEE (IEEE): 652-657) at 1.

22 53. When showing black, the pixels of a Super AMOLED display consume no power.  
23 They are in the same state as when the display and device are off. *Id.* at Figure 3.

24 54. To take advantage of the power-saving aspect of Super AMOLED technology, one  
25 should maximize the use of black in a graphical user interface. Using black for the area beyond  
26 the edge of documents is consistent with this goal and I have confirmed that the accused Samsung  
27 devices in fact use black background.

28

1           55.     Dr. Balakrishnan does not set forth a clear construction for the term “displaying” as  
2 used in this claim in his declaration or deposition testimony. Balakrishnan Depo. Tr. at 111-136.  
3 For example, in one portion of his testimony, Dr. Balakrishnan states: “My understanding is ...  
4 I’ve got the edge of the document. I’ve reached the edge, and I’m gonna show something, some –  
5 some amount of visuals beyond that edge. Displaying an area.” Balakrishnan Depo. Tr. at  
6 112:11-15. Dr. Balakrishnan also testified that “When the screen is turned off, the screen portion  
7 is not displaying anything.” Balakrishnan Depo Tr. at 124:21-125:12. This testimony seems to  
8 indicate “displaying” requires actively showing some amount of visuals.

9           56.     In another portion of his testimony, Dr. Balakrishnan states “the code would have  
10 to display... – figure out what it’s gonna display and what it’s not gonna display, and if it is – if  
11 it tells the – the screen don’t illuminate those – those particular pixels, that would be equivalent to  
12 saying display that area in black. So it would be displaying an area beyond the edge of the  
13 document.” Exhibit 3 (Balakrishnan Depo. Tr.) at 130:4-11. This seems to indicate that  
14 displaying an area in black (which is off for AMOLED displays, as discussed above) is displaying  
15 an area beyond the edge of the electronic document.

16           57.     As discussed above, for the Accused Smartphone Devices, Apple has alleged that  
17 the Gallery and Contacts applications infringes the ’381 Patent.

18           58.     I have reviewed the Gallery applications on the Accused Smartphone Devices. The  
19 area beyond the edge of the image appears black. Furthermore, I have reviewed source code for  
20 the Gallery application [REDACTED]  
21 [REDACTED] Excerpts for the source code for the Gallery application are provided in  
22 Exhibit 3. I have also reviewed the Contacts applications on the Accused Smartphone Devices.  
23 The area beyond the edge of the list appears black.

24           59.     Because the black background is what appears in the Gallery and Contacts  
25 applications beyond the edge of the electronic document and black pixels in Super AMOLED  
26 technology are in the *off* state, these applications do not “display” anything beyond the edge of the  
27 electronic document. Therefore, the Gallery and Contacts application does not meet the limitation  
28

1 “in response to an edge of the electronic document being reached ... displaying an area beyond the  
2 edge of the document.”

3 60. This is in contrast to other devices I have observed such as Apple iPod Touch, in  
4 which, for example, the Settings application clearly displays a non-black area beyond the edge of  
5 an electronic document.

6 61. Because all of the asserted claims require displaying an area beyond the edge of the  
7 document and Gallery and Contacts applications in the Accused Smartphone Devices does not  
8 meet this limitation, these devices do not infringe the asserted claims.

9 62. Furthermore, the accused Samsung devices do not meet the “displaying an area  
10 beyond the edge of the document” limitation under the doctrine of equivalents. The Gallery and  
11 Contacts applications both turn certain pixels off in order to conserve power and maximize the  
12 efficiency of the use of the Super AMOLED screen. Turning portions of the display off is  
13 substantially different from actively displaying an area beyond the edge of the document. The  
14 Gallery and Contacts therefore do not behave in substantially the same way nor do they achieve  
15 the substantially the same function or result as what is claimed by the “displaying an area beyond  
16 the edge of the document” limitation. Moreover, the differences between the Gallery and Contacts  
17 applications and the claimed “displaying an area beyond the edge of the document” limitation are  
18 not insubstantial because the consumption of power on a mobile device is a substantial  
19 consideration that is of interest to users.

20

21 I declare under penalty of perjury under the laws of the United States of America  
22 that the foregoing is true and correct.

23 Executed on August 22, 2011, at San Francisco, California.

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**GENERAL ORDER ATTESTATION**

I, Victoria Maroulis, am the ECF user whose ID and password are being used to file the foregoing document. I hereby attest pursuant to General Order 45.X.B. that concurrence in the electronic filing of this document has been obtained from Jeffrey Johnson.

/s/ Victoria Maroulis